Nikon F2
DP-1 / DP-11

Speed Indication Alignment

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1. Introduction

And warning

In this document I describe how I have aligned the shutter speed reading in the DP-11 viewfinder of a Nikon F2.

I have had no training as a camera repair technician. Most probably, some - or all - of my techniques and procedures will be frowned upon by a proper repair technician. Notwithstanding that, the many pictures I have taken during the process may be useful to a wide community.

Having said that, let's begin.

I have always dreamt of owning a Nikon F2 SLR camera. Recently I got the opportunity to buy not one two F2s at a real bargain price. One of them is a black F2SB which shows a lot of brassing but functions well. The other one is a chrome F2A that shows some issues with the viewing head.

One of those issues is the shutter speed reading in the display of the viewfinder. This speed view is a bit off, often showing two speeds at the same time. Although it is not influencing the camera's operation, I do find it annoying.

In the *Nikon F2 fans* Facebook group (https://www.facebook.com/groups/286168275667508/) I therefore posted the question on how to solve this problem. My question was answered by Bernd Schetter, who gave me instructions for aligning the readout without opening the viewfinder. In this document I report on following his instructions.

The procedure only requires a Japanese Industry Standard (JIS) size 00 cross head screwdriver and a 0.9mm flathead screwdriver. The viewfinder will not be opened. It does not even have to come off the F2 body.

2. History

The Nikon F2 is a professional 35mm, interchangeable lens, Single Lens Reflex (SLR) camera. By many, this camera was - and still is - considered to be the best ever made mechanically-controlled SLR.[1] The camera is a manual focus, manual exposure control SLR. It has been in production from 1971 to 1980. It was made by *Nippon Kogaku K.K.*, which was the name of the *Nikon Corporation* before 1988.

It is equipped with a horizontal-travel, focal plane shutter with titanium foil shutter curtains. Shutter speeds range from 1 to 1/2000 second and with the self-timer the shutter speed can be extended up to 10 seconds. Furthermore, it has a Bulb and Time setting and a flash X-sync of 1/80 second.

One of the striking features of the Nikon F2 is the use of interchangeable viewfinders with integrated Through The Lens (TTL) light metering. Over the production years, different heads have been developed. The body remained the same and functioned as a modular hub, making the Nikon F2 a full system camera.

The different heads are:

- **Nikon DE-1**. Plain pentaprism eyelevel viewing head with no built-in light meter and no exposure information.
- **Nikon DP-1**. Produced from 1971 to 1977. Needle exposure readout with +/- over/under exposure indication as well as shutter speed and aperture information in the display. It has a 60/40 percent center-weighted exposure reading, using cadmium sulfide (Cds) light meters. The Nikon F2 with the DP-1 viewfinder is known as the *Nikon F2 Photomic*.
- **Nikon DP-2**. Produced from 1973 to 1977. Arrow-shaped, LED over (+) and under (-) exposure readout. Functionally identical to the DP-1 but with a better low-

[1] **Maybe this is best formulated by Ken Rockwell in his Nikon F2 review (https://www.kenrockwell.com/nikon/f2.htm): "The original Nikon F of 1959 put LEICA in the coffin, and the F2 was the camera the almighty himself used to hammer in the nails."**

light sensitivity. The Nikon F2 with the DP-2 viewfinder is known as the *Nikon F2S Photomic*, or short *Nikon F2S*.

- **Nikon DP-3**. Produced from 1976 to 1977. +/0/- LED exposure readout with further increased low-light sensitivity, using silicon photodiode light meters. The DP-3 has an eyepiece blind for long exposures. The Nikon F2 with the DP-3 viewfinder is known as the *Nikon F2SB Photomic*, or short *Nikon F2SB*.
- **Nikon DP-11**. Produced from 1977 to 1980. The DP-11 functions exactly as the DP-1, but supports Nikon lenses with Automatic Indexing (AI). Pre-Ai lenses needed the meter coupling shoe – the Nikkor 'rabbit ears' – to couple the lens apertures to the viewfinder's meter. In the coupling procedure, the lens must be turned to the smallest aperture and back to the largest one to couple. This coupling is called 'indexing' by Nikon. The AI made this turning unnecessary. The Nikon F2 with the DP-11 viewfinder is known as the *Nikon F2A Photomic*, or short *Nikon F2A*.
- **Nikon DP-12**. Produced from 1977 to 1980. The DP-12 functions exactly as the DP-3, but supports Nikon lenses with Automatic Indexing (AI). The Nikon F2 with the DP-12 viewfinder is known as the *Nikon F2AS Photomic*, or short *Nikon F2AS*.

We are dealing here with a Nikon F2A (Nikon F2 with Nikon DP-11 viewfinder), see the pictures below.

Nikon F2A (Nikon F2 with Nikon DP-11 viewfinder).

3. The DP-11 Viewfinder Display

The view through the finder is shown in the next picture.

Nikon F2A viewfinder image with on the bottom from left to right: the aperture information, the exposure and the shutter speed information. The two circles show the 60/40 percent center-weighted exposure reading.

At the bottom of the viewfinder we will find the following information going from left to right: The aperture setting, the exposure and the shutter speed.

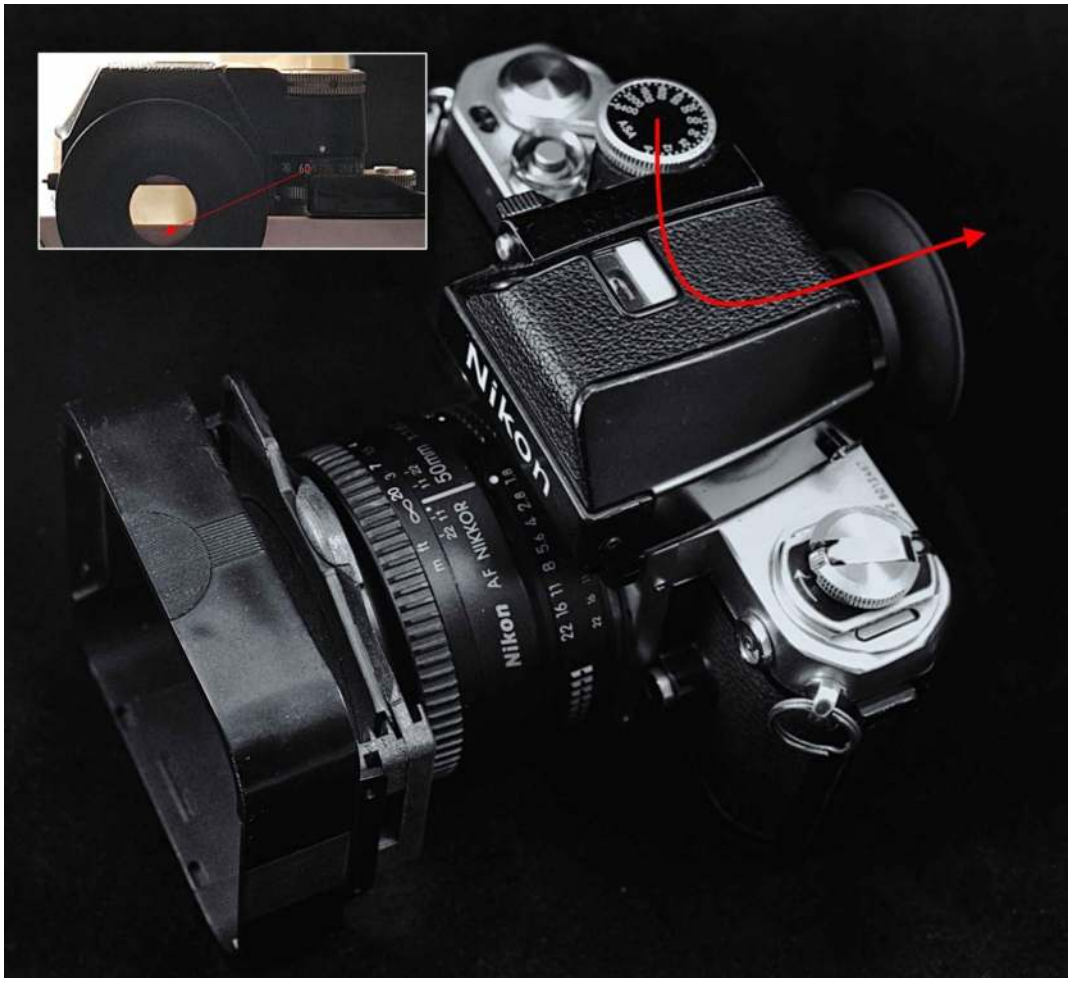
The aperture information is nicely aligned and needs no further attention.

The exposure is also aligned, although the reading seems to be off. This is the subject of another project (cleaning the resistor ring) that will be dealt with in another report. That will be written when I have collected the courage to open up the viewfinder.

Finally, we see the subject of this report: the shutter speed setting that is misaligned. In the picture above, the shutter speed was set at 1/2000 second.

4. The DP-11 Viewfinder Internals

Before we will move to the alignment procedure, we will first take a brief look at the internals of the DP-11. We will specifically look at how the shutter speed information is transferred from the speed selector dial to the viewfinder, see picture.



The shutter speed information is transferred through the DP-11 to the viewfinder.

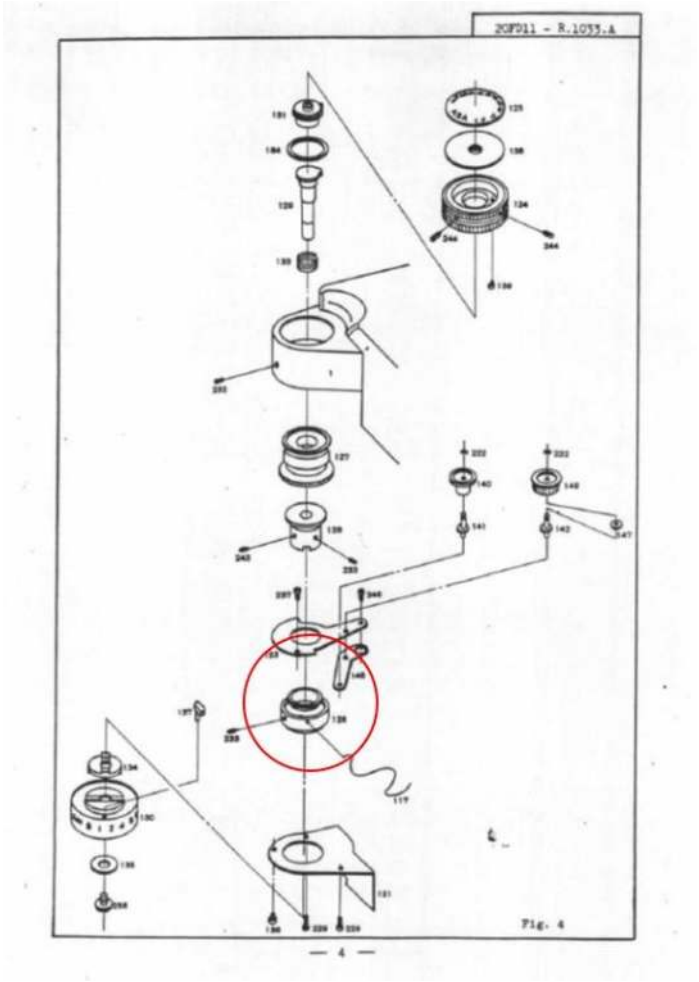
Understanding the mechanics will help in understanding the alignment procedure. Understanding the alignment procedure in its turn will prevent making mistakes.

Our first source for having a look at the viewfinder's inside is the *Nikon Photomic Finder DP-1 Repair Manual*. This repair manual can be found, amongst others, here: https://learncamerarepair.com/product.php?product=56&category=2&secondary=8. Since the DP-11 is functional very similar to the DP-1, we can use this manual.

This repair manual is a very good source for identifying all the different parts and how to disassemble/reassemble them. However, I find it less suited for understanding the functioning and interrelations of all the parts. Searching the web, I came across a thread in the *Photrio Forum* by *Robin Guymer*. It deals with the DP-1 finder and shows pictures making the functioning clear: https://www.photrio.com/forum/resources/nikon-f2-speed-indicator-string-replacement-in-dp1-finder.358/.

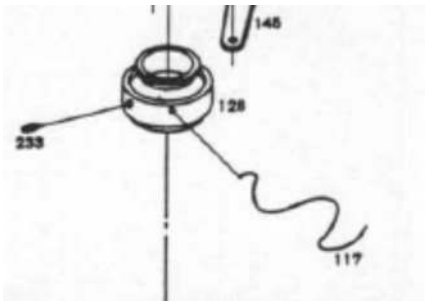
So, with all the necessary information gathered, let's try to explain how the shutter speed information is transferred from the speed selector to the viewfinder's display.

The shaft of the shutter speed selection dial is connected to a so-called *T-drum*. That is number 128 in the following picture, taken from the repair manual.



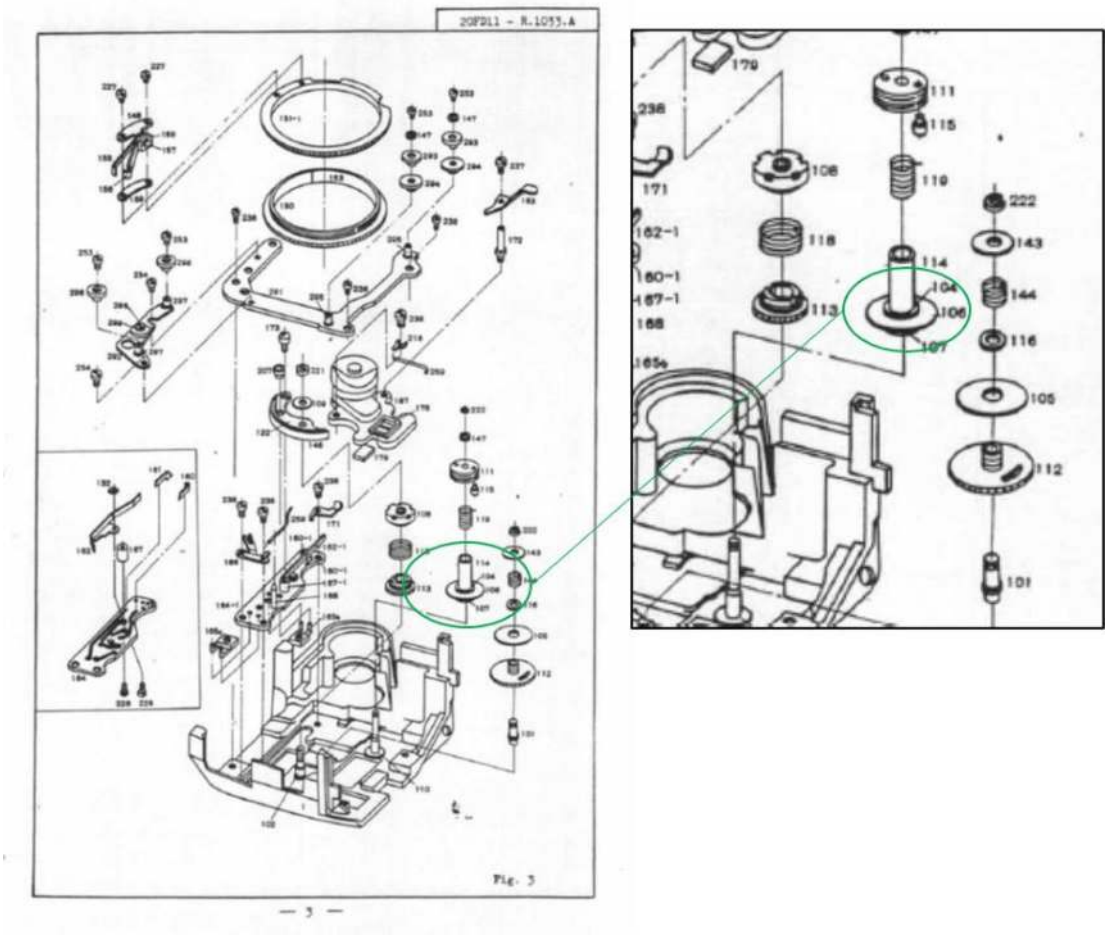
The T-drum (red circle) is connected to the shaft of the shutter speed selection dial.

The T-drum thus moves with the shutter speed selection dial. When the T-drum rotates it winds or unwinds a thread that is wound around the T-drum. That is number 117 in the picture above. See the next picture for the details.



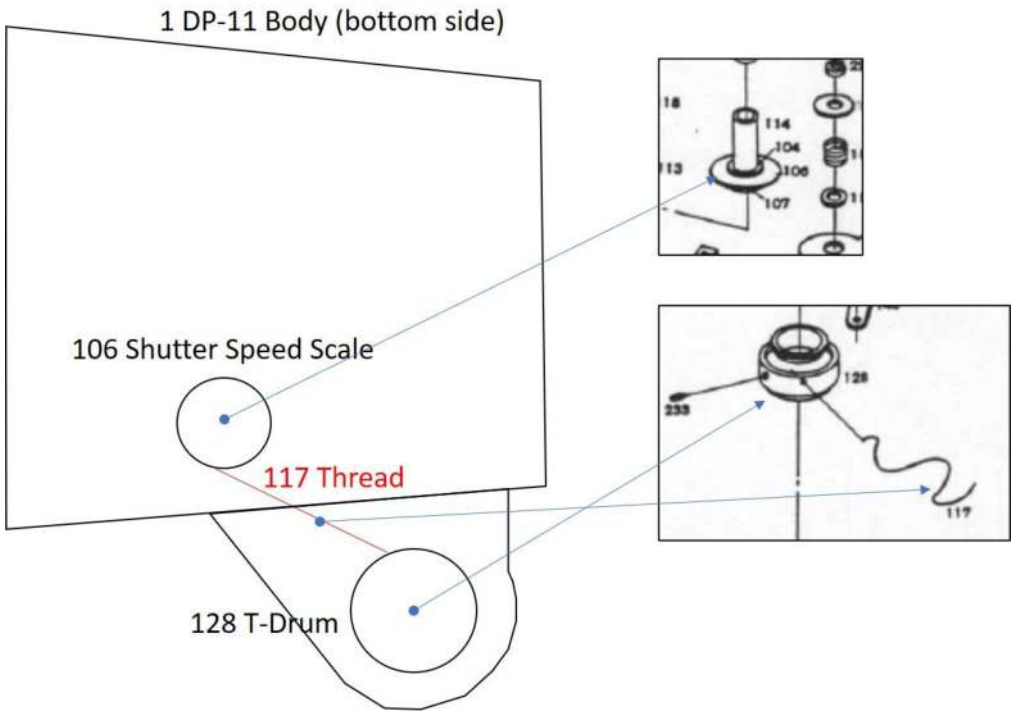
Thread (117) is connected to the T-drum (128).

On the other side this thread is connected to the shutter speed scale dial (106), shown in the picture below. This picture is again taken from the repair manual.



Shutter speed scale dial (106, in green circle) inside the DP-1 (DP-11) viewfinder.

The indication on the shutter speed scale dial is transferred to the viewer window through a mirroring system. The shutter speed scale dial is attached to a spring so that unwinding the thread at the T-drum will result in winding at the shutter speed scale dial. The functioning of T-drum, thread and shutter speed scale dial is schematically shown in the next figure.

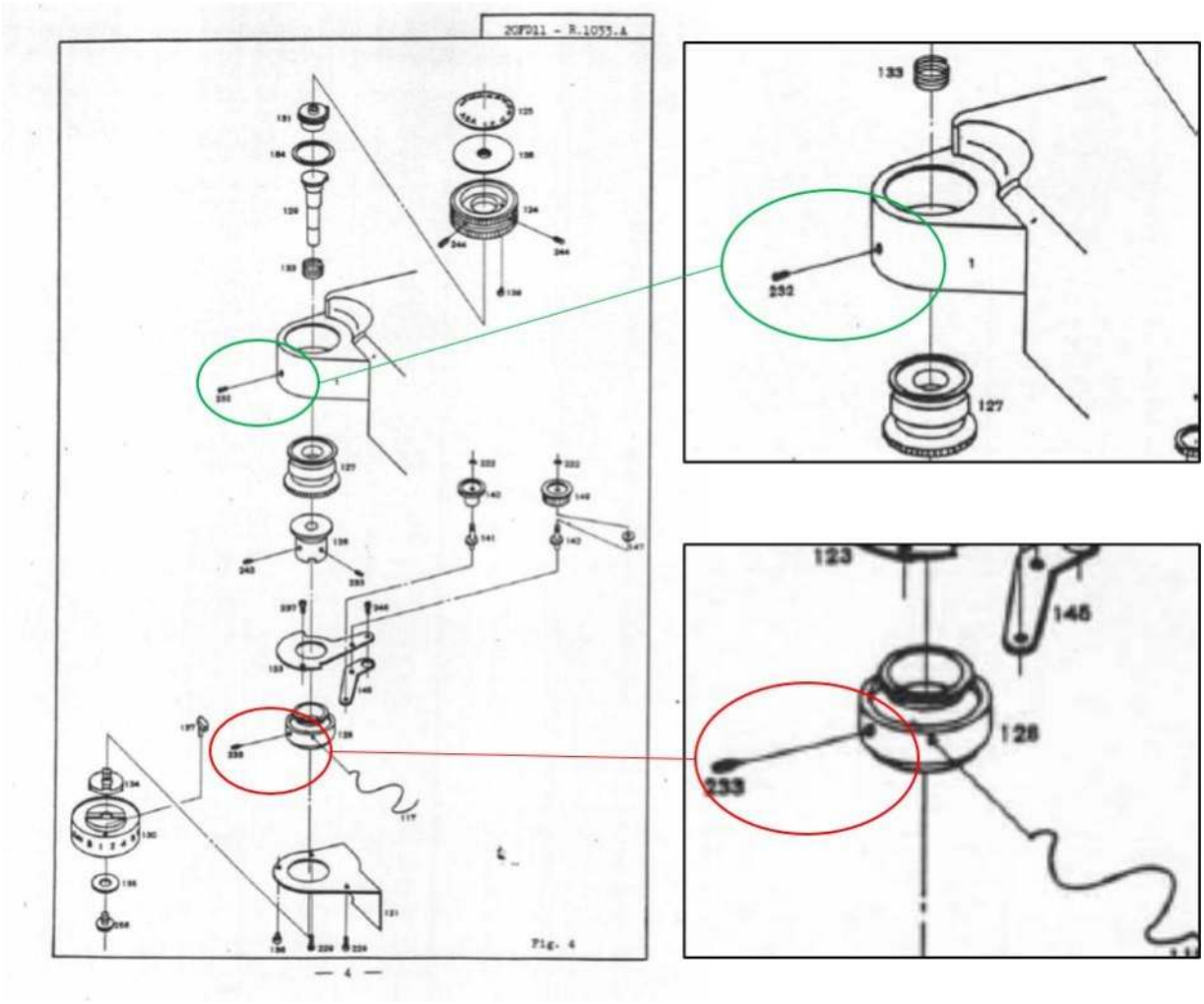


Interrelation between shutter speed scale dial, T-drum, thread and shutter speed scale dial.

From the above, we can conclude that for a small shutter speed indication misalignment, we can solve the problem at the T-drum position.

We will have to loosen the set screw 233 in the above figure. Thus, we will loosen the connection with the shutter speed selection shaft. By rotating the latter, we can bring the indication in the viewer and the set speed on the outside, i.e. on the F2 body, in agreement.

Fortunately, we will not have to open the viewfinder to get access to the mentioned set screw 233, see the next figure.



Getting access to the T-drum set screw from the outside of the DP-11 viewer. Screw 232 (green circle) closes off an access hole to set screw 233 (red circle).

In the body (1) of the DP-11 viewfinder, where the shutter speed selection dial runs though, an access hole is made to get access to the set screw 233. This access hole is closed off with a screw 232. So, all we have to do is remove screw 232, loosen screw 233, align the readout, tighten screw 233 and replace screw 232.

5. Alignment Procedure

The set screw access hole is found on the DP-11 viewfinder body where the shutter speed selection dial runs though the viewfinder body, see the next picture.

The set screw access hole is closed off with the screw in the red circle on the DP-11 viewfinder body.

To remove this screw, we will use a Japanese Industry Standard (JIS) crosshead screwdriver size 00. Note that JIS screwdrivers look very much like Philips screwdrivers but are not identical.

JIS screw driver left and Philips screw driver right. A subtle difference, but enough to ruin your screws when the wrong one is used.

The access hole screw is removed with a size 00 JIS crosshead screwdriver.

Note that on this DP-11, this access screw is a crosshead screw and not a flathead screw as is indicated in the DP-1 repair manual.

We will lay the access screw carefully aside and take a look at the access hole, see the next picture.

View on the access hole.

If you have not done so already, this will also be a perfect moment to put the camera on a tripod or at least an elevation. We will need to be able to look through the viewfinder while simultaneously holding a screwdriver that is inside the access hole. A table tripod is perfect for this purpose.

Putting the F2 on a table tripod will allow for the T-drum adjustment while looking though the viewfinder.

Now we will turn the shutter speed selection dial until we see the set screw underneath the access hole. For this DP-11 that was for a shutter speed between 1/60 and 1/125 seconds. Although not very well visible, the set screw turned out to be a flathead type. With a 0.9mm flathead screw I could get hold of the set screw. A bit of wiggling of the shutter speed selection dial was necessary for accomplishing that.

We will loosen the set screw. Loosen only, do not remove! For that we will need half to three quarters of a turn counter clockwise. This is the most dangerous part of the procedure. We will need to keep the screwdriver connected to the screw. If we will slip the screwdriver and turn the T-drum we will probably never get in touch with that set screw again. At least, not without opening the viewfinder. So please, do take care!

The set screw is loosened, using a 0.9mm flathead screwdriver. Do not loose contact with the set screw!

Now, we will look through the viewfinder while keeping the screwdriver connected to the (loosened) set screw. We will notice the speed visible in the viewfinder display and rotate the shutter speed selection dial to get the same reading on the F2 body. Once that is accomplished, we will tighten the set screw. Take care to not overtighten the set screw.
Next, we will check if for all shutter speeds the reading on the body and in the viewfinder display are identical. If not, we will repeat the procedure.
Finally, we will get a viewfinder display readout as shown in the next picture.

Nikon F2A viewfinder image with on the bottom from left to right: the aperture information, the exposure and the shutter speed information. The shutter speed read out is now aligned.

As a last step, we will reposition the screw for closing off the access hole.

Reposition the screw for closing off the set screw access hole.

6. Conclusion

Aligning the shutter speed readout in the Nikon F2's DP-1 or DP-11 viewfinder display turned out to be a very easy task. The trick is that all can be done without opening the viewfinder or even removing the viewfinder from the body. But I don't have the impression that the trick is widely known. Somebody has to tell you the trick. That is what happened to me and I hope that with this document I can pass the knowledge.